

ii) automatically accesses a program routine for reading the array or processing data from the read array based on the retrieved data.

45. (NEW) A method according to claim 1 wherein the array related data includes an indication as to whether a particular type of control probe is present on the array.

46. (NEW) A method according to claim 2 wherein the array related data includes an indication as to whether a particular type of control probe is present on the array.

Remarks

The Examiner is thanked for the Office Action mailed 11/25/2002. With regard to the maintained restriction requirement the previous response did not argue that a reference cannot teach more than one invention. What the previous response states that if the Examiner finds a reference which disclosed "only what is disclosed in a claim of one Group," it would then be logically inconsistent to make a novelty or obviousness rejection of a claim of another Group based solely on such a reference. For example, if the Examiner found a reference disclosing only what is in Group II, such a reference by definition adds nothing over what is already in Group II. Such a reference (disclosing only Group II) could not be used by itself to reject Group I since the Examiner has already found that Group I is novel and unobvious over Group II (as required by MPEP 802.01 for a restriction requirement).

Claims 1-16, 45, 46 are presently under consideration in the application. Claims 1-16 were rejected. In addition to the amendments discussed below, claims 1, 2 and 10 (the only independent claims in this group) have been amended in part (b) to make it clear that the saving of an instruction for reading an array or an instruction on processing data from an array following reading, occurs as part of the array fabrication process (i.e. before the array has been exposed to any sample). Note that this is specifically described at, for example, on page 16, lines 22-29 followed by exposure to a sample on page 17, lines 16-18. New dependent claims 45, 46 refer to the array related data including information on whether a particular type of control

probe is present as described, for example, on page 9, lines 5-10 and page 19, lines 5-19.

Claim Objections

The Examiner first raised a number of claim objections in Paragraph 4 of the Action. The Examiner is thanked for noting these errors and these have been corrected as follows (sub-paragraph numbers are those under Paragraph 4 on page 3 of the Action):

- a, b. Claim 3 has been cancelled and its limitations added to claim 1.
- b. “datafrom” has now been presented as two words.
- c. Claim 7 has now been made dependent upon claim 2.

Claim Rejections - 35 U.S.C. 112

The Examiner raised a number of indefiniteness rejections under Paragraph 6 of the Action which are discussed in sequence below. It is believed that the below discussed amendments to the claims now overcome these rejections. Sub-paragraph letters reference those used under Paragraph 6 of the Action.

a. The Examiner stated that it was unclear in claim 1 as to whether the array related data was limited to the three types recited. The Examiner also stated that “read array” was not understood in the context of the claim. Claim 1 has been amended to limit the “array related data” to comprising any of two types of data, namely “array related data which comprises any of an instruction for reading an array or an instruction on processing data from an array following reading of the array”. Accordingly, this removes the “may comprise” language and also clarifies the claim in terms of the previously referenced “read array”.

b. The Examiner stated that “remote” in claim 1 was indefinite. The claim has been clarified to recite “a location remote from where the array is fabricated”.

c. Claims 2-8 were stated to be indefinite for the same reasons as discussed in connection with claim 1. Claim 2 has now been similarly amended as claim 1.

d. The Examiner stated that "remote" in claims 2-8 was indefinite. Claim 2 has been amended similar to claim 1 to recite "a location remote from where the array is fabricated".

e. Claims 2-8 were stated to be indefinite due to the use of "in association with" as indefinite. Claim 2 has been amended to now more clearly recite that the "array related data is saved in association with an identifier so that the array related data can be retrieved from the memory using the identifier". Thus the "association" has now been clearly defined in the claim. Note that such retrieval is described, for example, on page 17, lines 23-27 of the present application.

f. Claims 2-8 were stated to be indefinite for reciting "associating the identifier with an array" in view of the use of "associating". Claim 2 has now been amended to include the limitation of claim 3 and simply state "applying the identifier to the substrate or a housing carrying the substrate". On the question of what is required by 35 USC § 112, second paragraph, the Federal Circuit's discussion in Miles Laboratories Inc. v. Shandon Inc. 27 USPQ 1123 @ 1126 (Fed.Cir. 1993) is instructive:

"The test for definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. *Orthokinetics*, 806 F.2d at 1576. If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more. *Hybritech*, 802 F.2d at 1385. The degree of precision necessary for adequate claims is a function of the nature of the subject matter. *Id.*"

Further, M.P.E.P. § 2173 outlines the same approach when considering the second paragraph of 35 USC § 112. In the present case, one of skill in the art is at least "reasonably apprised" of the scope of claim 2 as amended.

g. Claims 3-6, 9 were stated to be indefinite since claim 3 recited "the identifier is associated with the array". As mentioned above, claim 3 has been canceled and claim 2 (from which the remainder of these claims now depend) now recite "applying the identifier to the substrate or a housing carrying the substrate".

h. Claim 6 was stated to be indefinite for the use of “to a remote location” and “from a remote location”. Claim 6 has been amended to clarify that the location being referenced is “remote from the database”.

i. Claim 7 was stated to be indefinite for the use of “remote location”. This claim has been amended to clarify that the location is a “location remote from where the array is fabricated”.

j. Claim 8 was stated to be indefinite for the use of “remote location”. However, claim 8 refers to the portable storage medium being “shipped to the same remote location as the array” and that remote location has now been specified in claim 7 (from which claim 8 depends) as being “remote from where the array is fabricated”. Accordingly, with this clarifying amendment one is now at least “reasonably apprised” of the scope of claim 8.

k. Claim 9 was stated to be indefinite for the use of “remote” location. Claim 9 has been amended to delete the word “remote”.

l. Claim 9 was stated to be indefinite for reciting “the associated map identifier”, both for lack of antecedent basis in antecedent claim 6 and for the use of “associated”. Claim 9 has now been amended to refer to “a received communication of the identifier in association with which the array related data was saved” as referenced in claim 2. Consequently, the identify of the identifier is now more clearly specifically established.

m. Claims 10-16 were stated to be indefinite on the basis that the claims did not limit the method to the claimed “central fabrication station”. Claim 10 has now been amended to recite in the preamble that the subsequent procedures are executed “at the central fabrication station”.

n. Claims 10-16 were stated to be indefinite on the basis that it was unclear whether the array related data was limited to the three types described, and for the use of “read array”. Claim 10 has also been amended to limit “array related data” to data comprising any of two types of data, namely “array related data which comprises any of an instruction for reading an array or an instruction on processing data from an array following reading of the array” (note that the use of “comprises” of course, allows for additional data to be present). This amendment also clarifies the claim by removing the “read array” language.

o. Claims 10-16 were stated to be indefinite for the use of “the remote locations”. Claim 10 has now been amended to recite “shipping ...to one or more locations each remote from the central fabrication station”.

p. Claims 10-16 were stated to be indefinite due to the use of “which array related data is saved in association with a map identifier” in claim 10, on the

basis that “in association with” was non-specific. Claim 10 has now been amended to more clearly recited “which array related data is saved in association with an identifier so that the array related data can be retrieved from the memory using the identifier”. This is the same amendment as made to claim 2 above discussed under paragraph “e”.

q. Claims 10-16 were stated to indefinite for the lack of antecedent basis for the use of “the identifier” in part (d) given the use of the “map identifier” in part (c). Part (c) of claim 10 has now been amended to refer simply to an “identifier” rather than a “map identifier”.

r. Claims 10-16 were stated to be indefinite for the use of “the corresponding substrate” in part (d) of claim 10, both for lack of antecedent basis and the use of “corresponding”. Claim 10, part (d) has now been amended to reference “applying the identifier to the substrate carrying the array or a housing carrying that substrate”.

s. Claim 11 was stated to be indefinite for the recitation of “the chemical moieties” lacking antecedent basis in the “biopolymers” of claim 10. Claim 11 has been amended as suggested by the Examiner to now recite “the biopolymers”

t. Claim 12 was stated to be indefinite for the lack of antecedent basis for “the polynucleotides” in the “biopolymers” of claim 10. Claim 12 has been amended to depend from claim 11 which references “polynucleotides”.

u. Claims 14, 15 were stated to be indefinite for the recitation “the corresponding identify map”, both for the lack of antecedent basis in claim 10 and the use of “corresponding”. Claim 14 has now been amended to recite “the array related data and identifier for that array...” which now has proper antecedent basis in claim 10 and clarifies the language by removing the word “corresponding”.

v. Claims 14, 15 were stated to be indefinite for the recitation of “associated identifier” in claim 14. As mentioned in the preceding paragraph, claim 14 has now been amended to remove this language and consequently it is believed this rejection is also overcome.

w. Claims 14, 15 were stated to be indefinite for the use of “remote”. Both of these claims have now been clarified by being amended to recited “remote from the central fabrication station”.

x. Claim 15 was again stated to be indefinite for the use of “remote”. This has been clarified by amending claim 15 as recited in the preceding paragraph “w”.

y. Claim 15 was stated to be indefinite for the recitation “the corresponding fabricated array” on the basis that “fabricated array” and

“corresponding fabricated array” lacked antecedent basis in claim 10 and for the use of “corresponding”. Claim 15 has now been amended to recite “with the fabricated array for which the portable storage medium carries array related data and the identifier”. This amendment clarifies the claim by providing a clear antecedent basis and removing the use of “corresponding”.

z. Claim 15 was stated to be indefinite for the recitation “the set of biopolymers” on the basis of lack of antecedent basis in claim 10. Claim 15 has been amended to now recite “a set of biopolymers”.

aa. Claim 16 was stated to be indefinite for the use of “remote”. The word “remote” has been deleted from claim 16.

bb. Claim 16 was stated to be indefinite for lack of antecedent basis for the use of “identity map”. Claim 16 has now been amended to recite “array related data” which is also recited in parent claim 10.

cc. Claim 16 was stated to be indefinite for the use of “the associated map identifier” due to lack of antecedent basis and the use of the term “associated”. Claim 16 has been amended to delete reference to “identifier” and to further clarify that the “associated identifier” is “the identifier saved in association with the array related data” as specifically referenced in parent claim 10.

Claim Rejections - 35 U.S.C. 101

The Examiner first provisionally rejected claims 1-16 under 35 U.S.C. 102(e) as being anticipated by copending application No. 09/775,387 (Paragraph 8 of the Action) as well as by Cattell (U.S. Patent 6,180,351). Both of the foregoing have a common inventor with the present application and are co-owned by the owner of the present application, Agilent Technologies, Inc.

As mentioned above, all of the independent claims in claims 1-16 have been amended to remove reference to the array related data saved as part of the array fabrication procedure as possibly only including data on a characteristic of the fabricated array, and to now require that such array related data include an instruction for reading an array or an instruction on processing data from an array following its reading. The Examiner has not pointed to any such feature in application Serial No. 09/775,387 or the Cattell patent and consequently it is believed these rejections of the claims as amended, should now be withdrawn.

Claim Rejections - 35 U.S.C. 103

Claims 1-16 were rejected over Perttunen et al. (U.S. Patent No. 5,968,728) in view of Ellison et al. (U.S. Patent Application Publication No. 2002/0086319A1). Perttunen et al. does appear to disclose the mapping of molecular receptors to the various sites on an array, which mapping is stored in association with an identification code (see col. 7, line 40 to col. 8, line 62 cited by the Examiner, and particularly col. 8, lines 8-19). However, as mentioned above all of the independent claims of the group currently under consideration (1-16) now require the saving of array related data which must include an instruction for reading an array or an instruction on processing data from an array following reading of the array. The Examiner has not pointed to any such disclosure or suggestion of the foregoing feature in the relied upon references. Accordingly, it is believed this rejection should also be withdrawn in relation to the claims as amended.

Claim Rejections - Double Patenting

The Examiner rejection claims 1-6 for obviousness-type double patenting over Cattell (U.S. Patent No. 6,180,351) and rejected claims 10, 13-16 for provisional obviousness-type double patenting over Application No. 09/775,387. Upon indication of allowable subject matter in the foregoing claims Applicant will submit a Terminal Disclaimer over the foregoing references.

In view of the above amendments and discussion it is believed that claims 1-16, 45 and 46 should now be in condition for allowance. If the Examiner is of the view that there are any outstanding issues, she is invited to call Gordon Stewart at (650)485-2386.

Respectfully submitted,



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APPENDIXShowing All Claim Amendments Now Being Made

1. (AMENDED) A method of generating an addressable array of chemical moieties on a substrate, comprising:
 - (a) depositing the moieties onto different regions of the substrate so as to fabricate the array;
 - (b) before the array has been exposed to a sample, saving in a memory array related data, which ~~array related data may comprises~~ any of ~~data on a characteristic of the fabricated array~~, an instruction for reading an array, or an instruction on processing data from an ~~read array following reading of the array~~;
 - (c) shipping the fabricated array, and forwarding the array related data to a ~~remote~~ location remote from where the array is fabricated.

2. (AMENDED) A method of generating an addressable array of chemical moieties on a substrate, comprising:
 - (a) depositing the moieties onto different regions of the substrate so as to fabricate the array;
 - (b) before the array has been exposed to a sample, saving in a memory array related data, which ~~array related data may comprises~~ any of ~~data on a characteristic of the fabricated array~~, an instruction for reading an array, or an instruction on processing data from an ~~read array following reading of the array~~, which array related data is saved in association with an identifier so that the array related data can be retrieved from the memory using the identifier;
 - (c) associating the identifier with the array ~~applying the identifier to the substrate or a housing carrying the substrate~~;
 - (d) shipping the fabricated array, and forwarding the identifier to a ~~remote~~ location remote from where the array is fabricated.

3. ~~A method according to claim 3 wherein the identifier is associated with the array by applying the identifier to the substrate or a housing carrying the substrate.~~

4. (AMENDED) A method according to claim 23 wherein the chemical moieties are biopolymers.

5. A method according to claim 4 wherein the biopolymers are DNA.

6. (AMENDED) A method according to claim 23 wherein the memory is a database, the method additionally comprising retrieving the array related ~~data from~~ data from the memory and communicating the retrieved data to a ~~remote~~-location remote from the database in response to receiving a communication of the associated identifier from the remote location.

7. (AMENDED) A method according to claim 23 wherein the memory comprises a portable storage medium, the method additionally comprising shipping the portable storage medium to a ~~remote~~-location remote from where the array is fabricated.

8. A method according to claim 7 wherein the portable storage medium is shipped to the same remote location as the array.

9. (AMENDED) A method according to claim 6 additionally comprising applying a communication address to the substrate or a housing carrying the substrate, which communication address identifies a ~~remote~~-location from which the array related data ~~identity map~~ will be communicated in response to a received communication of the ~~map~~-identifier in association with which the array related data was saved.

10. (AMENDED) A method of generating, at a central fabrication station, addressable arrays of chemical moieties on multiple substrates, comprising at the central fabrication station for each array:

(b) depositing biopolymers onto different regions of a substrate so as to fabricate multiple arrays;

- (c) before the array has been exposed to a sample, saving in a memory array related data, which ~~array related data may comprises~~ any of data on a characteristic of the fabricated array, an instruction for reading an array, or an instruction on processing data from an ~~read array following reading of the array~~, which array related data is saved in association with an ~~map identifier~~ so that the array related data can be retrieved from the memory using the identifier;
- (d) applying the identifier to the ~~corresponding~~ substrate carrying the array or a housing carrying the ~~that corresponding~~ substrate; and
- (d) shipping each of the fabricated arrays with applied identifier to one or more of the ~~remote stations~~ locations each remote from the central fabrication station.

11. (AMENDED) A method according to claim 10 wherein the biopolymer~~chemical moieties~~ are polynucleotides.

12. (AMENDED) A method according to claim 11~~10~~ wherein the polynucleotides are DNA.

13. (AMENDED) A method according to claim 10 wherein the memory is a database, the method additionally comprising retrieving array related data for arrays from the memory and communicating the data to ~~remote locations~~ remote from the database in response to receiving a communication of associated identifiers from the remote locations.

14. (AMENDED) A method according to claim 10 wherein for each of multiple arrays the ~~corresponding identity map~~ array related data and identifier for that array and associated identifier are saved on a memory comprising a portable computer readable storage medium, the method additionally comprising shipping the portable storage mediums to multiple ~~remote locations~~ remote from the central fabrication station.

15. (AMENDED) A method according to claim 14 wherein each of the portable storage mediums are shipped with the ~~corresponding~~ fabricated array for which the

portable storage medium carries array related data and the identifier, to the a same remote-location remote from the central fabrication station from which a the set of biopolymers used in fabricating that array was received.

16. (AMENDED) A method according to claim 10 additionally comprising applying a same communication address to each of the substrates or housings carrying the substrates, which communication address identifies a ~~remote-location~~ from which array related data ~~each identity map~~ will be communicated in response to a received communication of the ~~associated map-identifier~~ saved in association with the array related data.

17. A method of using an addressable array of chemical moieties on a substrate, comprising:

- (a) receiving the addressable array; and
- (b) in a processing unit:

- (i) retrieving array related data from a memory, which array related data may comprise any of data on a characteristic of the fabricated array, an instruction for reading an array, or an instruction on processing data from a read array; and

- (ii) automatically accessing a program routine for reading the array or processing data from the read array based on the retrieved data.

18. A method according to claim 17 wherein the array is received with an associated identifier and the method additionally comprises reading the identifier, and wherein the array related data is retrieved based on the identifier.

19. A method according to claim 18 wherein the identifier is carried on a substrate for the array, or a housing carrying the substrate.

20. A method according to claim 18 wherein the processing unit automatically presents the user with an opportunity for making one or more possible selections or alerts the user as to a selection based on the retrieved array related data.

21. A method according to claim 20 wherein the processing unit automatically presents the user with an opportunity for making one or more possible selections based on the retrieved array related data is presented by displaying a list of possible selections for a user.
22. A method according to claim 20 wherein the program routine normally presents the user with an opportunity for making one or more possible selections, and wherein the processing unit automatically alerts the user as to a selection, or prevents the user from making a particular selection based on the retrieved array related data.
23. A method according to claim 20 wherein the program routine normally presents the user with an opportunity for making multiple selections by simultaneously displaying the multiple selections, and wherein the particular selection which the user is prevented from making a based on the retrieved array related data is still displayed.
24. A method according to claim 20 wherein the selections are of different routines for reading the array or processing data from a read array.
25. A method according to claim 18 wherein the memory is a remote database, the method additionally comprising communicating the read identifier to the remote database and receiving in response the identity map.
26. A method according to claim 18 wherein the memory is a portable storage medium received from a remote location.
27. A method according to claim 19 additionally comprising:
machine reading a communication address on the substrate or the housing; and
communicating the identifier to the communication address and receiving the associated array related data in response.

28. A method according to claim 19 additionally comprising exposing the array to a sample; and reading the array following the exposure to the sample.
29. A method according to claim 28 wherein the array is read in a same apparatus in which the map identifier is read.
30. A method comprising forwarding a result of an array reading obtained by a method of claim 28, to a remote location.
31. A method comprising transmitting or receiving data representing a result of an array reading obtained by a method of claim 28.
32. An apparatus for producing an addressable array of biopolymers on a substrate, comprising:
- (a) an array fabricator to deposit the biopolymers onto different regions of the substrate so as to fabricate the array;
 - (b) a processor to save in a memory array related data, which array related data may comprise any of data on a characteristic of the fabricated array, an instruction for reading an array, or an instruction on processing data from a read array, which array related data is saved in a memory association with an identifier.
33. An apparatus according to claim 32 wherein the processor causes the array related data to be communicated to a remote location in response to receipt of the associated map identifier from that remote location.
34. An apparatus according to claim 33, additionally comprising a memory in which the processor saves the memory map and associated map identifier.
35. An apparatus for receiving an addressable array of biopolymers on a substrate, comprising a processor which:

(i) retrieves array related data from a memory, which array related data may comprise any of data on a characteristic of the fabricated array, an instruction for reading an array, or an instruction on processing data from a read array; and

ii) automatically accessing a program routine for reading the array or processing data from the read array based on the retrieved data.

36. An apparatus according to claim 35 additionally comprising a reader which reads a map identifier carried on an array substrate or a housing for the array, and wherein the processor retrieves array related data based on the read identifier.

37. An apparatus according to claim 36 wherein the processor communicates the read identifier to a remote location and receives the identity map in response.

38. An apparatus according to claim 35 wherein the processor retrieves the memory map from a computer readable portable storage medium.

39. An apparatus according to claim 37 wherein the reader also reads a communication address on the substrate or the housing, and wherein the processor communicates the map identifier to the read address.

40. A computer program product, comprising: a computer readable storage medium having a computer program stored thereon for performing, when loaded into a computer communicating with a fabricator to fabricate an addressable array of biopolymers on a substrate, the method of:

(a) depositing the moieties onto different regions of the substrate so as to fabricate the array; and

(b) saving in a memory array related data, which array related data may comprise any of data on a characteristic of the fabricated array, an instruction for reading an array, or an instruction on processing data from a read array.

41. A computer program product according to claim 40 which additionally forwards array related data to a remote location.

42. A computer program product according to claim 40 wherein the array related data is saved in a memory in association with the an identifier.

43. A computer program according to claim 42 wherein the program additionally applies a communication address to the substrate or a housing carrying the substrate, which communication address identifies a remote location from which the array related data will be communicated in response to a received communication of the associated identifier.

44. A computer program product, comprising: a computer readable storage medium having a computer program stored thereon for performing, when loaded into a computer, the steps of:

(a) receiving an identifier associated with array related data;

(b) in response to the received identifier:

(i) retrieves array related data from a memory based on the identifier, which array related data may comprise any of data on a characteristic of the fabricated array, an instruction for reading an array, or an instruction on processing data from a read array; and

ii) automatically accesses a program routine for reading the array or processing data from the read array based on the retrieved data.

45. (NEW) A method according to claim 1 wherein the array related data includes an indication as to whether a particular type of control probe is present on the array.

46. (NEW) A method according to claim 2 wherein the array related data includes an indication as to whether a particular type of control probe is present on the array.